

SUSTAINABLE OPERATIONS

Ecosystems, Consumption and our Environmental Footprint



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Ecosystems, Consumption and Our Environmental Footprint

Three Parts:

- Climate Change: Footprint Connections and Opportunities
- Greater Yellowstone Greenhouse Gas Inventory
- The Future – What's next?





Climate Change / Environmental Footprint Connections & Opportunities

*Creating Habits
Today, Conserving
Resources for
Tomorrow*

Gifford “insisted that conservation must be reinvigorated, revived, renamed, revitalized by each successive generation, its implications, its urgencies, its logistics translated in terms of the present of each of them”.

- Cornelia Pinchot

Sustain the health, diversity, and productivity of the nation’s forests and grasslands to meet the needs of present and future generations



To be sustainable is “to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of future generations of Americans.” January, 2007 EO 13423

Growing Our Sustainable Operations Effort Together



*R5 / PSW
Footprint 2006*



*Making our Fleet
GREENER!*

I'M POWERED BY ELECTRICITY

Sustainable Operations • 2006

U.S. FOREST SERVICE • ROCKY MOUNTAIN REGION



*R9 – Walk the Talk
Courageous
Conservation*



Sustainability
ROCKY MOUNTAIN REGION
and Our Baseline Ecological Footprint

November 2005



*Energy
Water*

*Fleet / Transportation
Waste Prevention / Recycling
Green Purchasing
Sustainable Leadership*

National Footprint Reports FY06 and FY07

(Courtesy of your National Integrated Footprint and EMS Focus Area 1 Teams)



Climate Change is...

- a connector across all footprint areas
- the biggest systems issue we've yet dealt with as a species
- not to be solved via an unbalanced 'diet'
- a 'tipping point' opportunity to connect the resources we use and our resource management job
- is on the Chief's critical issues list



Why everyone will have different footprint strategies?

- Place-based adaptations - not all ecosystems are the same
- People-based adaptations – not all humans are the same
- Communities of practice and place
- What unique opportunities exist for your unit or discipline?

**YOU CAN STOP THIS
SHAMEFUL WASTE!**



**Remember—Only you can
PREVENT FOREST FIRES!**

U.S. Department of Agriculture
Forest Service

Approved by Bureau of the Forest and Range Protection
U.S. Department of Agriculture

Approved by
Bureau of Conservation and Management
U.S. Department of the Interior

Energy

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Energy

Heating Oil (cost)	Natural Gas (cost)	Electricity (cost)	LPG/ Propane (cost)	Est. CO2 Emissions (Metric tons)
\$3,270,000	\$3.370.000	\$17,800,000	\$1,670,000	154,794

What we know:

- **Costs are low**
- **2003 total cost for FS \$36 million**
- **Significant cost unallocated to any particular unit**
- **2007 total cost for FS \$26 million**

What we don't know:

- **Power from renewable energy systems**
- **Sources of energy**
- **GSF of building heated/cooled for Energy Intensity**



Energy

What's mandated:

- **Reduce Energy use intensity by 3% annually**
- **Use renewable energy**
- **Use ESPCs and UESCs to implement projects**
- **Generate renewable energy on FS land**
- **Audit 25% of buildings per year**
- **Enable ENERGY STAR® functions**
- **Install meters in federal buildings**
- **Follow High Performance Building Guidelines**
- **Total Net Zero Energy by 2050**



What we're doing:

- **NREL Partnership**
- **Green Power purchase – USDA and R2**
- **ESPCs – R2, R4, R3, PNW**
- **Cleaning up energy bills**
- **Distributing Top 10 Energy Conservations Habits**
- **Vending Miser Micro-grant Program**
- **LEED Green Buildings**
- **Ranger District Extreme Make-over Video**

Energy

Future Opportunities:

- **Clarify Electronics shut off / vampire loading**
- **INFRA Utility Module**
- **Reinvest Savings**
- **Rebates**
- **Energy as project selection criteria**
- **Others?**





Fleet / Transportation

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Fleet/ Transportation

	Natural Gas	Prop	E-85	Bio-Diesel	Gasoline	Diesel	TOTAL
Gallons	1,430	4,440	21,400	13,400	9,588,000	2,346,000	11,975,000
Tons CO ₂							105,502

What we know:

- **80% + of our Fleet is 4x4's**
- **Average fuel economy est at 11.5 mpg**
- **FY07: spent \$65 million**

What we don't know:

- **Bulk fuel use by vehicle**
- **'Other' travel impact**
- **Project equipment (#/fuel use)**

	Sedans/Wagons	Buses	Light Trucks	Medium Trucks	Heavy Trucks	TOTAL
miles	3,531,000	342,000	77,359,000	50,658,000	6,290,000	138,200,000
# of rigs	563	53	11,946	7,969	1,463	21,721 (28,694FTE's)

Fleet/ Transportation

What's mandated:

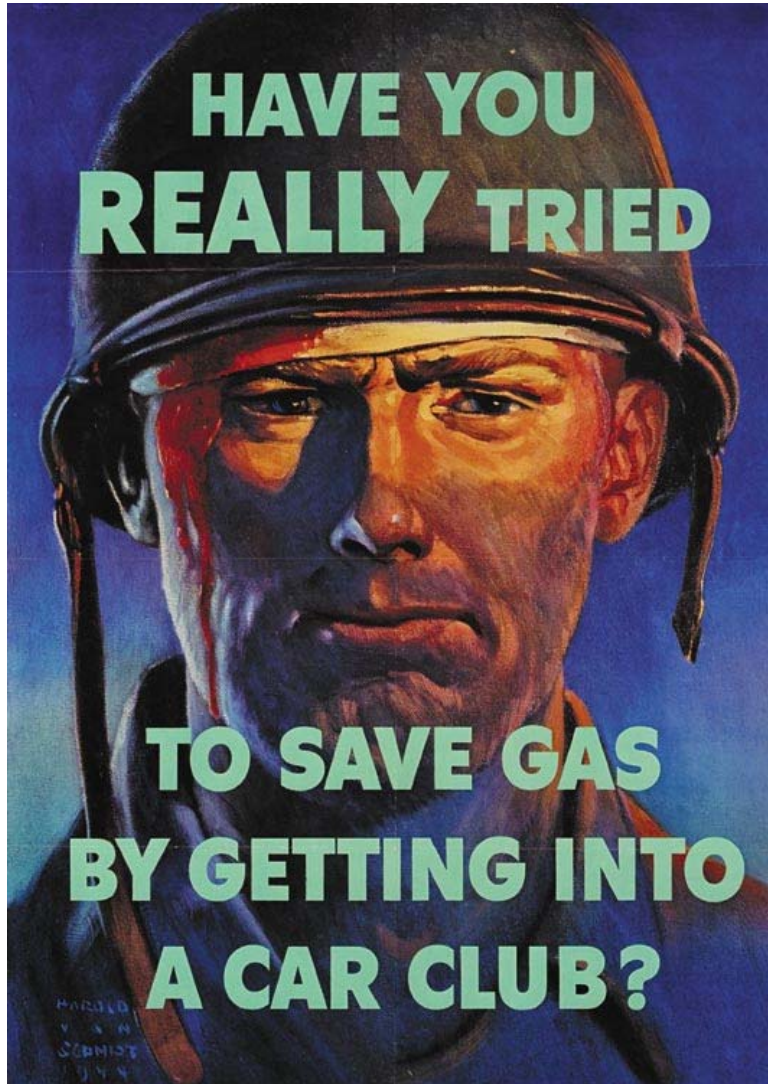
- **Reduce Fleet consumption of petroleum-based fuel 2% annually**
- **Increase non-petroleum based fuel consumption 10% annually**
- **Use PIH vehicles where feasible**
- **Increase fleet economy to 35 mpg**



What we're doing:

- **NREL Partnership – Right-size audit**
- **Alternative-fueled Road Maintenance Crew**
- **Life-cycle costing tool for Fleet selection**
- **Eco-driving Guidance**
- **EMS Significant Aspect – Fleet Management**

Fleet/ Transportation



Future Opportunities:

- More Driver Education
- Carbon offsetting
- Alternative Technology Trainings

Other Transportation Info:

- GYCC Transportation / Fleet Letter
- Jan 07 – 50 Video Conf. Systems
- April 08 – 309 Video Conf. Systems
- 2,860 hours (30 days) March/April 2008
- '07 purchased 64,386 roundtrip air tickets



Water

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Help Keep Our Water Clean!

Water

What we sort of know:

- **1,002,103,000 estimated gallons used in FY07**
- **\$3.0 million spent in FY07**
- **Significant connection between energy source and water consumption**



What we don't know:

- **Water that's not included in an NFC bill**
- **Water lumped with sewer/trash**
- **Water used for fire suppression activities**
- **Number/type of water conserving devices**

Water

What's mandated:

- **Reduce water consumption intensity by 2% annually**
- **Conduct water audits on at least 10% (25%?) of buildings annually**



What we're doing:

- **Installation of water conservation devices**
- **Energy Savings Performance Contracts (R2, R3, R4)**
- **Hose washing at Missoula Fire Cache**
- **Energy & Water Micro-grants**

Water

Future Opportunities:

- **Connect resources with use – articulate this to our publics**
- **Question conservation as part of water development on NFS Lands**
- **Incorporate water quality issues into our purchasing habits**
- **Others?**





Green Purchasing

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Green Purchasing

What we know:

- **Spent \$1.15 Billion FY07**
- **7,774 Purchase Card Holders**
 - **770,000 transactions**
- **Many opportunities**
- **USDA – Biobased Lead**



What we don't know:

- **Dollars spent on green purchases**
- **Who is doing it now**
- **Short List of Products**

Green Purchasing

What's Mandated :

- **Implement Sustainable Acquisition Practices**
 - **EPEAT**
 - **Energy Star**
 - **Bio-Based**
 - **Recycled Content**
 - **Environmentally Preferable**



What we are doing:

- **Some training**
- **Webpage**
- **GSA Partnership**
- **Janitorial Supplies and Contracts**
- **100% recycled paper on some units**
- **Biobased products in Fire Contracts**

Green Purchasing

Future Opportunities

- **Go Green on a few key items**
- **Partner with sister agencies**
- **More Training**
- **Fact Sheets (paint example)**
- **Green buildings**
- **Partner with suppliers - packaging**



Why Recycled Paper is Important

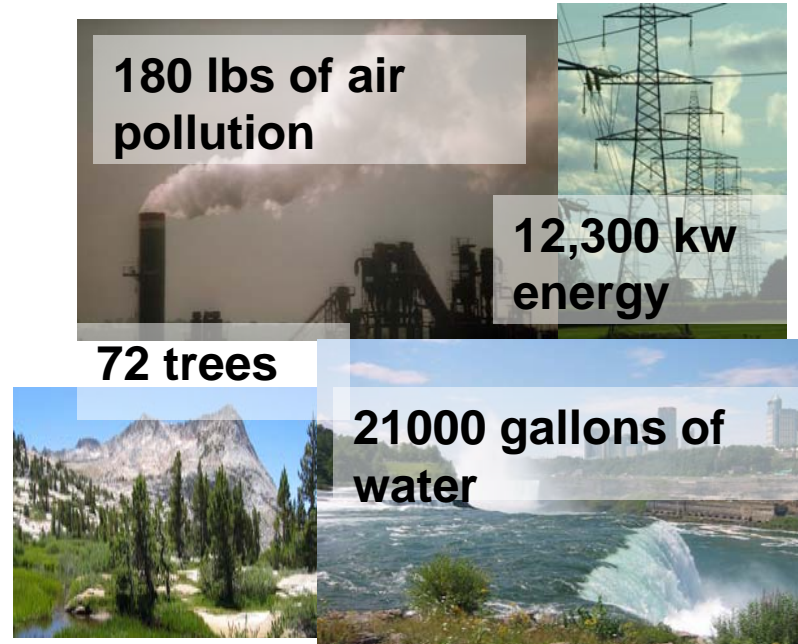
By switching 120 cases of paper to 100% recycled content Bighorn NF annually saves these resources...

180 lbs of air pollution

12,300 kw energy

72 trees

21000 gallons of water





Waste / Prevention & Recycling

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Reduce, Reuse, Recycle, Rot

Waste Prevention & Recycling

What we know:

- **Many opportunities & recycling saves resources**
- **Not all units have access to opportunities**
- **Spent \$11,000,000 in water, trash & other BOC**
- **Approx 30% of our sites have some recycling**



What we don't know:

- **Dollars spent on waste disposal**
- **Extent of recycling activities**

Waste Prevention & Recycling

What's mandated:

- **Reduce quantity of toxic and hazardous materials and chemicals acquired, used, and disposed of**
- **Increase solid waste diversion by 40% (USDA goal)**
- **Maintain cost-effective waste prevention and recycling programs in facilities**



What we're doing:

- **Fire Cache Assessment**
- **Micro-grant Program for Recycling**
- **Partnerships with Permittees**
- **Propane cylinders**
- **Batteries**
- **Proceeds retention**
- **Dumpster Diving**
- **Woodsy Owl Talks**
- **Rechargeable Battery Corp. MOU**



G.O.O.S. Paper Notebook

Waste Prevention & Recycling

Future Opportunities:

- **Waste Audits, EPA Support**
- **Partnership with USDA**
- **Local Communities Collaboration**
- **Fire Camps**
- **Other?**

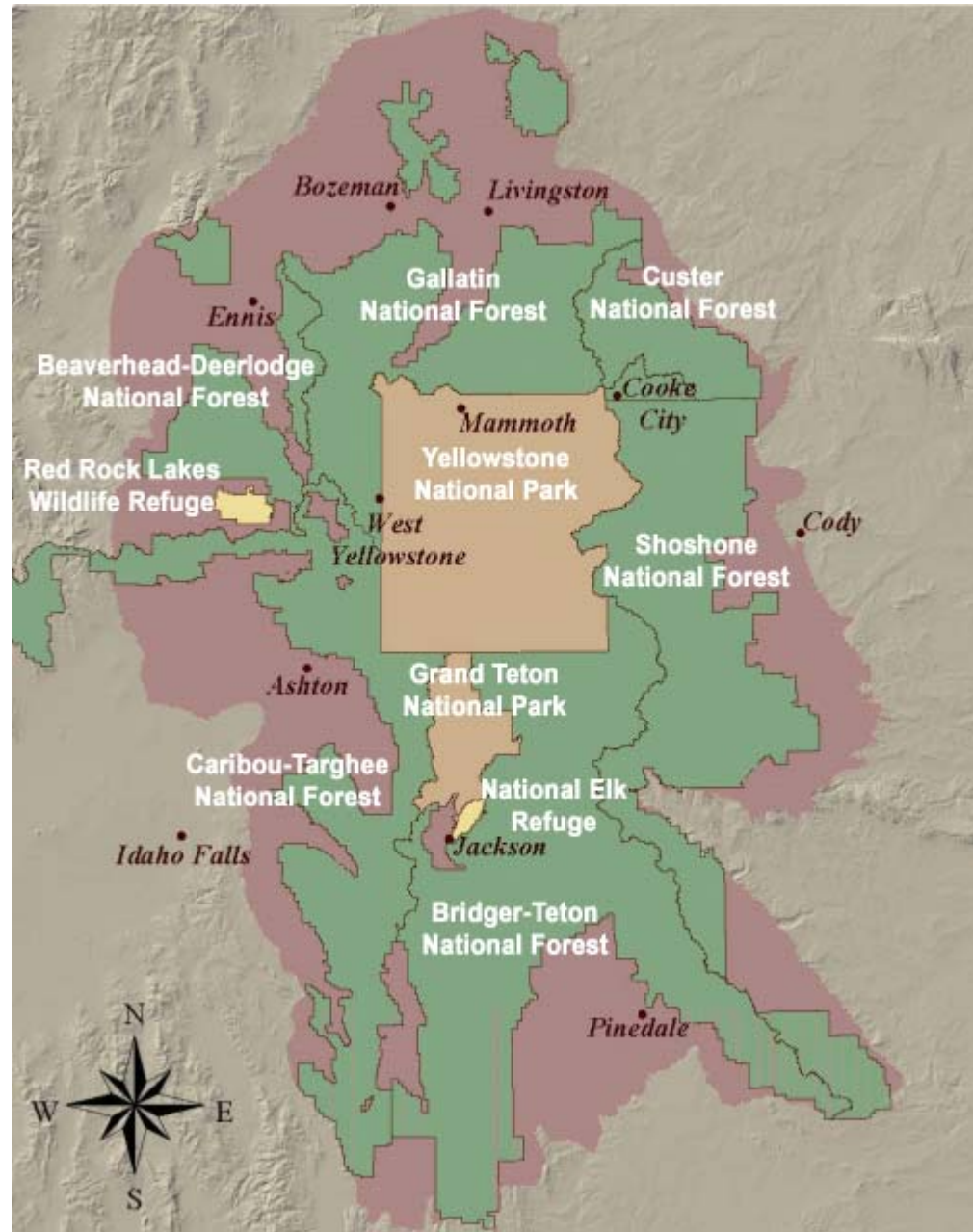


Sustainability is a Process





Creating a Greenhouse Gas Inventory for the Greater Yellowstone Area



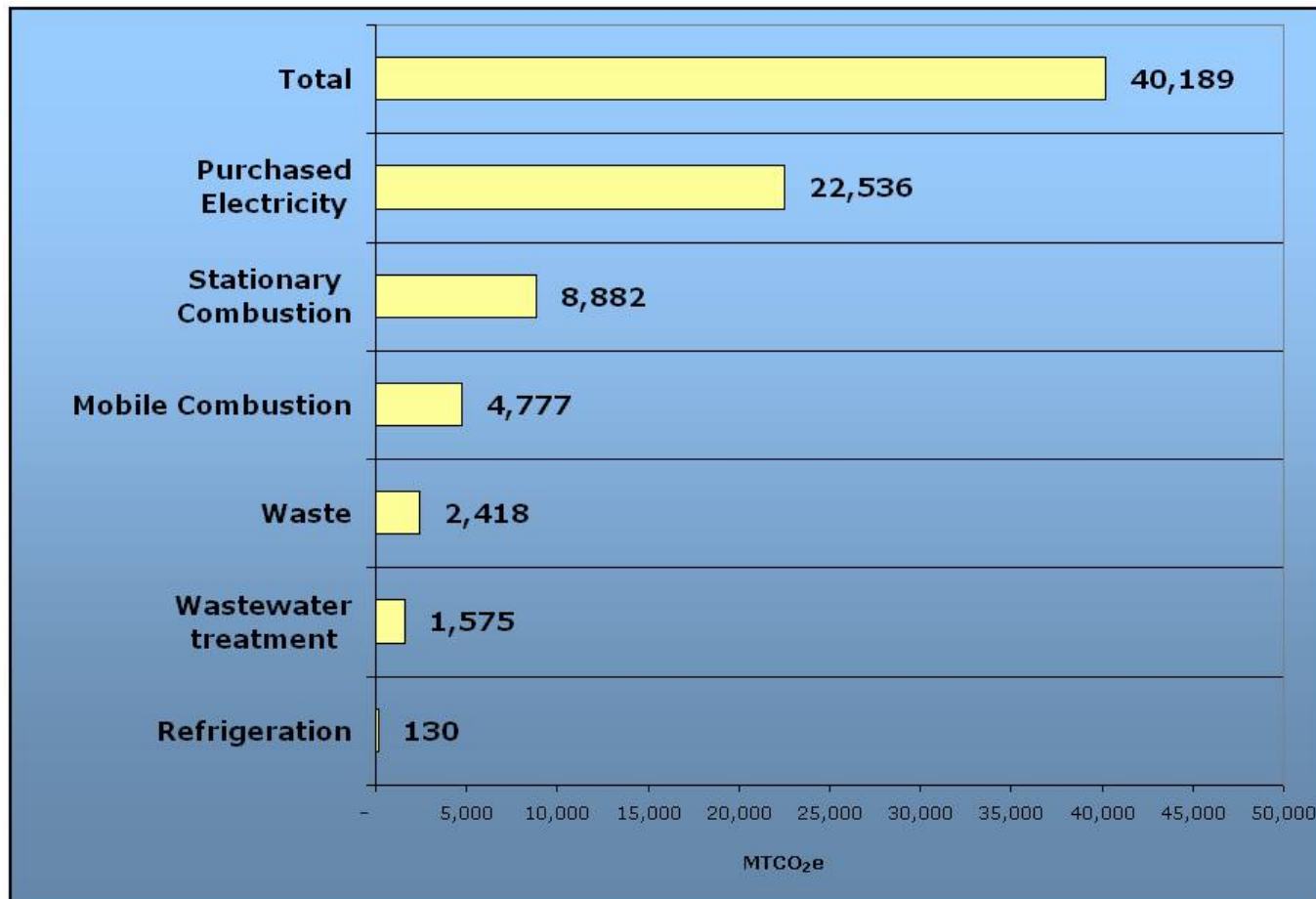
Why a Summary GHG Inventory?

- Allow for shared goal setting across GYA land management agencies – leverages existing efforts
- Identifies differences and strengths of varying operations
- Supports connections between our land management missions and the resources we consume
- New territory – maybe first in Nation to develop GHG inventory/goals on ecosystem scale



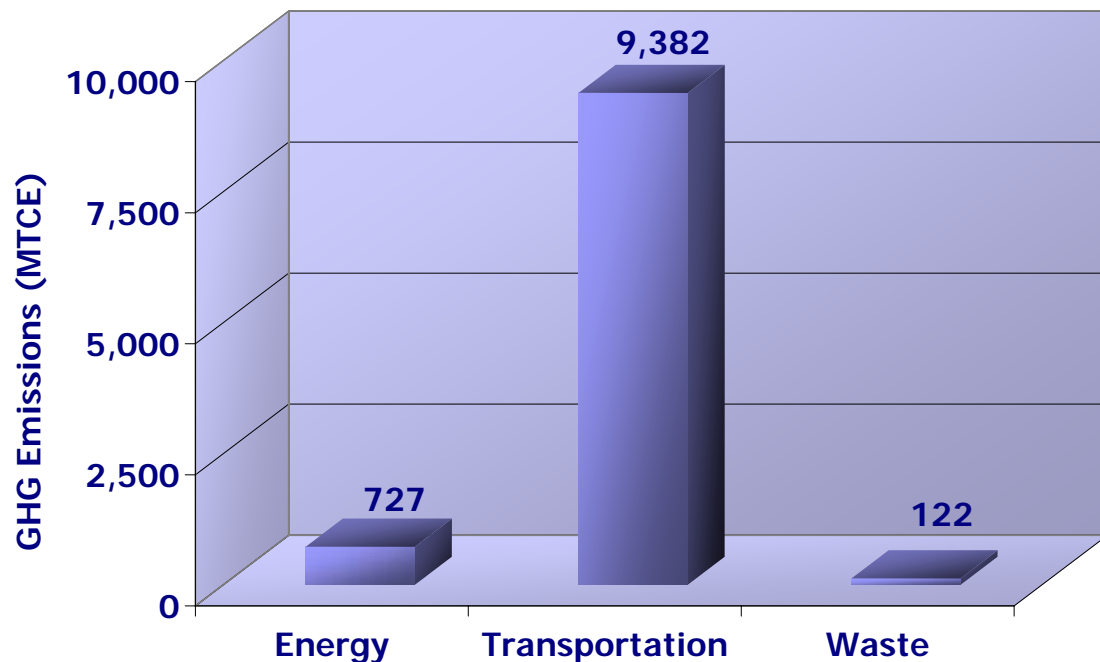
Status: Yellowstone National Park

- Inventory completed
- Priority projects identified



Status: Grand Teton National Park

- Inventory Completed 2007 using CLIPP Tool
- Not all Concessions and Partners Included
- Airport under permit not included - Questions about how to scope?
- Differences in measures
- May not have new facilities included



Status: Six National Forests

- Forest Service formally joined EPA Climate Leaders – GYA is a pilot location
- EPA Executive Leader Candidate Supporting Inventory
- Initial data collection started
- Target completion July 2008



Status: Wildlife Refuges

- Forest Service
Detailer supporting
inventory
- Anticipate fuel use
to be significant



Next Steps...

- Interagency Agreement with NREL
- Inventory Slicing & Dicing
- Joint Goal Setting



The Future

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What will conservation look like in the next century for ...

The earth as a whole...?

Yourself...?

Your organization...?

Your local community...?

The millions of acres of forests and grasslands...?



Increase Agency Capacity and Capabilities at All Levels

- Data and leading measures of success
- Support lesson sharing and place-based adaptations
- Include others who provide services and/or help deliver programs (concessionaires, lessors, partners)



treadlightly!®
LEAVING A GOOD IMPRESSION



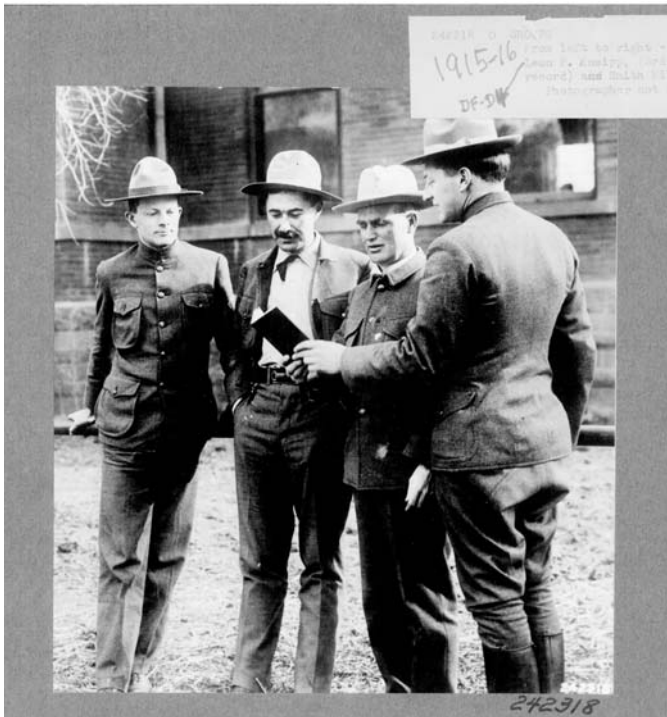
Create Value via Reduced/Changed Consumption Patterns

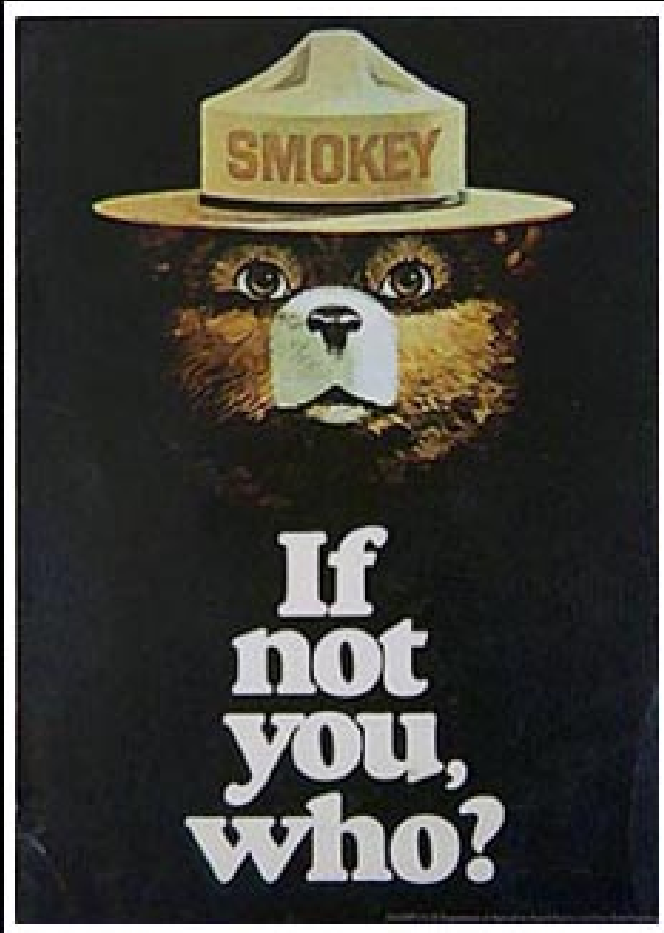
- Reinvest financial savings....such as recycling
- Work with partners and communities
- What are your meeting habits?



Build Legitimacy and Support for an Agency-wide Sustainable Operations Effort

- Leadership 'walk the talk' of a consumption ethic
- Appropriate Performance Standards
- New/Seasonal Employee Orientation





“What future do we want to create.....

Not the future we think is do-able, or the one we would settle for...

... but what do we really want?”

Donella Meadows

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What If We Created Some Environmental Footprint Principles?

Waste Prevention/Recycling	=	Zero Waste
Fleet / Transportation		Zero Emissions
Energy		Zero Net Energy Usage
Water		Zero Watershed Impact
Green Purchasing		Zero Impact Purchases
Leadership		Leave No Habit Unturned

Striving toward....

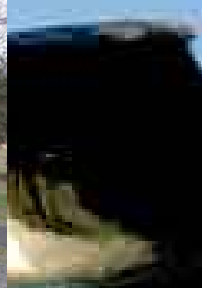




...Zero Waste



... Zero Emissions



... Zero Watershed Impact



Footprint Impact

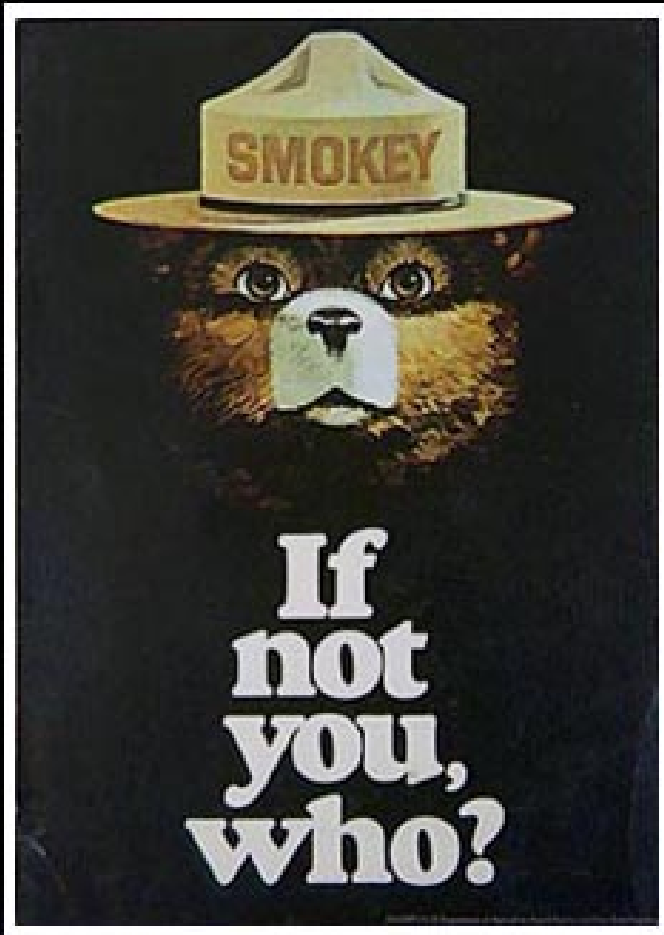


....Net Zero Energy



...Leave No Habit Unturned





Sustainability is a process



Start where you are,
use what you have, do
what you can.

Create the habitat for
success... mobilize
your human capital.

Share your stories

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Changing Light Bulbs in the Service of Ecosystems

	Incandescent 25 Watt Bulb 	PAR 20 Super Bright LED Bulb 
Life Span	1,000 hours	50,000 hours
Bulb Costs	\$0.70 (\$35.00 for 50 bulbs)	\$18.00
Electricity Use	1250 kwh	150 kwh
Electricity Cost \$0.20/kwh	\$250.00	\$30.00
Total Costs	\$285.0	\$48.00
\$\$ Savings	\$237 per Bulb (\$11,850 for 50 bulbs)	
CO₂ Savings	1531 lbs per Bulb (38.3 tons for 50 bulbs)	